

CLAIMS

1. A proton conductor comprising a base material, an acidic substance and a basic substance,

wherein the acidic substance has protons;

at least part of the protons are dissociated by the basic substance; and

at least one of the acidic substance and the basic substance is immobilized on a surface of the base material.

2. The proton conductor according to claim 1, wherein at least part of the at least one of the acidic substance and the basic substance is a polymer, and the base material is retained in a matrix of the polymer.

3. The proton conductor according to claim 1, wherein both of the acidic substance and the basic substance are immobilized on the surface of the base material.

4. The proton conductor according to claim 1, wherein the base material is a porous body having pores or through-holes, and the at least one of the acidic substance and the basic substance is contained in the pores or the through-holes of the porous body.

5. The proton conductor according to claim 4, wherein the at least one of the acidic substance and the basic substance is an organic compound having a hydrophilic part and a hydrophobic part in the molecule.

6. The proton conductor according to claim 5,

wherein the organic compound forms a built-up film in the pores or through-holes.

7. The proton conductor according to claim 4, further comprising a non-electron conductive substance, wherein the non-electron conductive substance clogs at least part of the pores.

8. The proton conductor according to claim 4, wherein the porous body has at least the through-holes.

9. The proton conductor according to claim 1, wherein the base material is composed of an inorganic substance.

10. An electrolyte membrane comprising the proton conductor according to claim 1.

11. An electrode comprising the proton conductor according to claim 1.

12. A fuel cell comprising an anode, a cathode and an electrolyte membrane interposed therebetween, wherein the electrolyte membrane is the electrolyte membrane according to claim 10.

13. A fuel cell comprising an anode, a cathode and an electrolyte membrane interposed therebetween, wherein at least one of the anode and the cathode is the electrode according to claim 11.